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KAUAʻI GENERAL PLAN UPDATE:

SOCIOECONOMIC ANALYSIS AND FORECASTS

February 2014

Prepared for
The County of Kauaʻi
Department of Planning and Permitting

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POPULATION

Definition

As defined by the U.S. Census Bureau, the resident population of the County of Kaua'i is the number of people living in the County of Kaua'i on a specific day during the year, usually July 1. The resident population includes civilian and military personnel and their dependents, and some part-time residents. Excluded from these counts are non-residents (i.e., temporary residents, visitors, and part-time residents living on Kaua'i for less than five months of the year).

The estimated population is calculated using a components of change model that incorporates information on natural increase (births, deaths) and net migration (net domestic migration, net international migration) that occurred in an area since the latest decennial census. Components of change data provide a detailed record of how the additions and subtracts from the population in one year produce the population in the next year.

Source

The resident population data for the period between 1990 and 2012, the historical data, are taken from the State of Hawai'i Data Book published annually by the Department of Business, Economic Development, and Tourism (DBEDT)[1].

The changing demographic population of Kaua'i suggests an aging population with limited ability to maintain the levels of natural growth experienced in the last two decades.

Forecast for the County of Kaua'i

Official population projections for the State of Hawai'i and its four counties are provided by DBEDT in their 2040 projections[2]. Those projections are produced and updated periodically to support Hawai'i's Statewide Planning system.

Forecast Method

Included in the 2040 projections published by DBEDT is a projected annual growth rate of about 1.2 percent per year for the State and 1.1 percent per year for Kaua'i. The average annual rates of change decrease slightly over the projection period.

DBEDT's method of projecting the population was based on modeling the natural increase and net migration at the state and county levels. The rationale for the projections also includes the generally accepted assumption that population and economic growth for the next three decades will be higher for the Counties of Kaua'i, Maui, and Hawai'i than for the City and County of

[1] State of Hawaii Data Book. Department of Business, Economic Development and Tourism. Accessed June 2013. http://dbedt.hawaii.gov/economic/databook/

[2] *Population and Economic Projections for the State of Hawaii to 2040*. Department of Business, Economic Development and Tourism 2040 Series. March, 2012. http://files.hawaii.gov/dbedt/economic/data_reports/2040-long-range-forecast/2040-long-range-forecast.pdf

Honolulu. Short of changing the population projection for the State, it would be difficult to accept projections for Kauaʻi, Maui, and Hawaiʻi that are substantially lower than the State average.

The prospects for higher population growth on Kauaʻi were also discussed with forecasters from government, academic, and financial sectors. The major driver, they agreed, would have to be increased numbers of jobs, especially high-paying jobs. Job forecasts were generally higher than for population or housing units and suggest a slightly higher rate of growth for Kauaʻi (perhaps 1.1 percent per year) would be needed to supply the employment for new jobs. Another mechanism for reaching that level of growth would be an increase in net migration. We might reasonably assume that new jobs would be filled by a lessening of the outflow of younger Kauaʻi residents and more in-migration among job seekers from other Hawaiʻi counties and areas outside the State.

The Kauaʻi forecasting model generated for this study uses the 1.15 percent per annum level as a high estimate, and 0.8 percent per annum for the low forecast. The moderate or baseline estimate is 1.1 one percent per year.

All forecasts are shown as roughly linear projections from the last recorded empirical data to a forecast point in 2035. The forecasts are linear trends representing population growth over the forecast period. Year-to-year population change will vary around the trend line according to numerous demographic and economic factors.

Forecast

Figure 1 and Table 1 show the baseline population forecast for the County of Kauaʻi through the year 2035. The line in Figure 1 tracks the population numbers, while the bars indicate the annual population growth rate.

Figure 1: Population of Kauaʻi County, 1990 to 2035

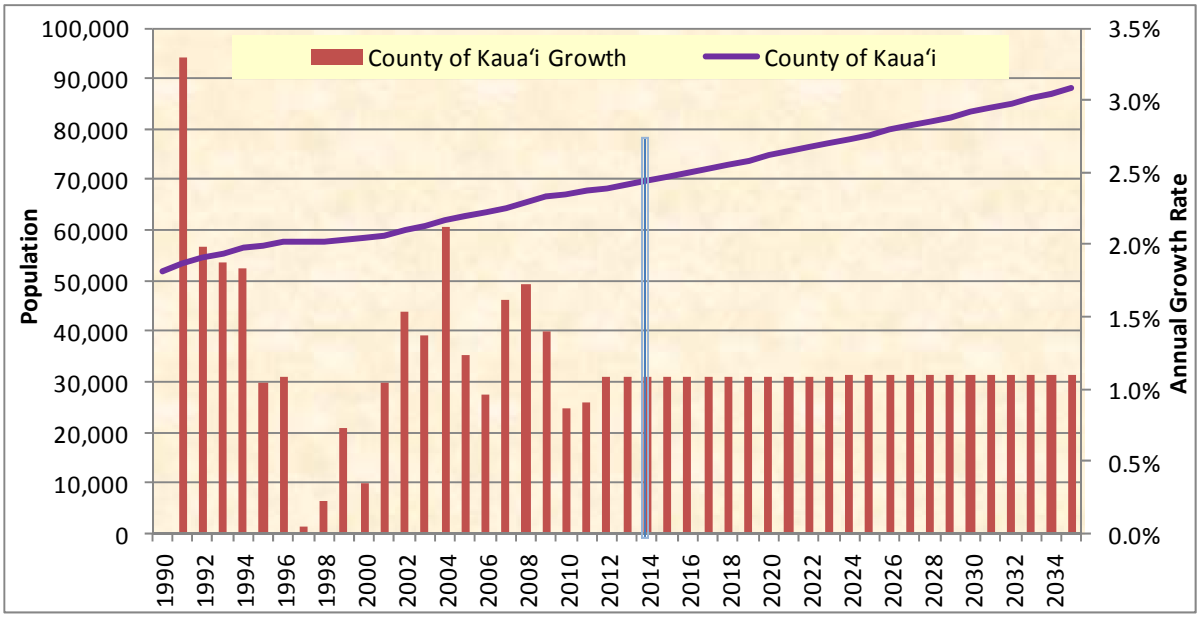

Table 1: Population of Kauaʻi County, 1990 to 2035

	Year					
	1990	2000	2010	2020	2030	2035
County of Kauaʻi	51,676	58,463	67,091	74,693	83,328	88,013
Average annual growth rate		1.24%	1.39%	1.08%	1.10%	1.10%

Discussion

Total population for the County of Kauaʻi is projected to increase from 67,091 in 2013 to 88,013 in 2035. That represents a total growth of 31.2 percent between 2010 and 2035, or about 1.10 percent per year.

Forecast for the Kauaʻi County Planning Areas

This step in the forecasting process involves allocating the total population in each year of the forecast period to one of six District Planning Areas in the County of Kauaʻi. Data are not available for constructing individual population models for each District, so the allocation depends on forecasting percentages of population residing in each of the six planning areas.

Forecast Method

Ten-year anchor points for the allocation process were taken as the percentage of the population living in each of the six planning areas as reported in the U.S. Decennial Census for Kauaʻi in 1990, 2000, and 2010. Population distributions taken from the American Community Surveys (ACS) conducted from 2007 through 2011 were used to augment the anchor points for those years. Estimates for interim years were modeled according to County population growth data. A rise in County population in any given year was allocated to each of the districts according to the district's percent of the population in the previous year. The method preserves the trend line between anchor points and models the distribution around the trend line according to the year-to-year pattern of population change for the County as a whole.

These can be compared with District rates of change as shown in the 2013 Kaua'i County Multimodal Land Transportation Plan (MMLTP)[3]. The MMLTP figures do not match the General Plan Update forecasting parameters exactly. The district boundaries do not match, and MMLTP only estimates population for five districts. The general parameters of the forecasting problem hold across both models. The largest growth is expected for the Līhuʻe Community Planning District, with higher than average growth also expected for the Kōloa-Poʻipū-Kalāheo District.

[3] *Kauaʻi Multimodal Land Transportation Plan*. January 30, 2013. http://moveKauaʻi.net/?page_id=520

Forecast

Figure 2: Population of Kauaʻi County Planning Areas, 1990 to 2035

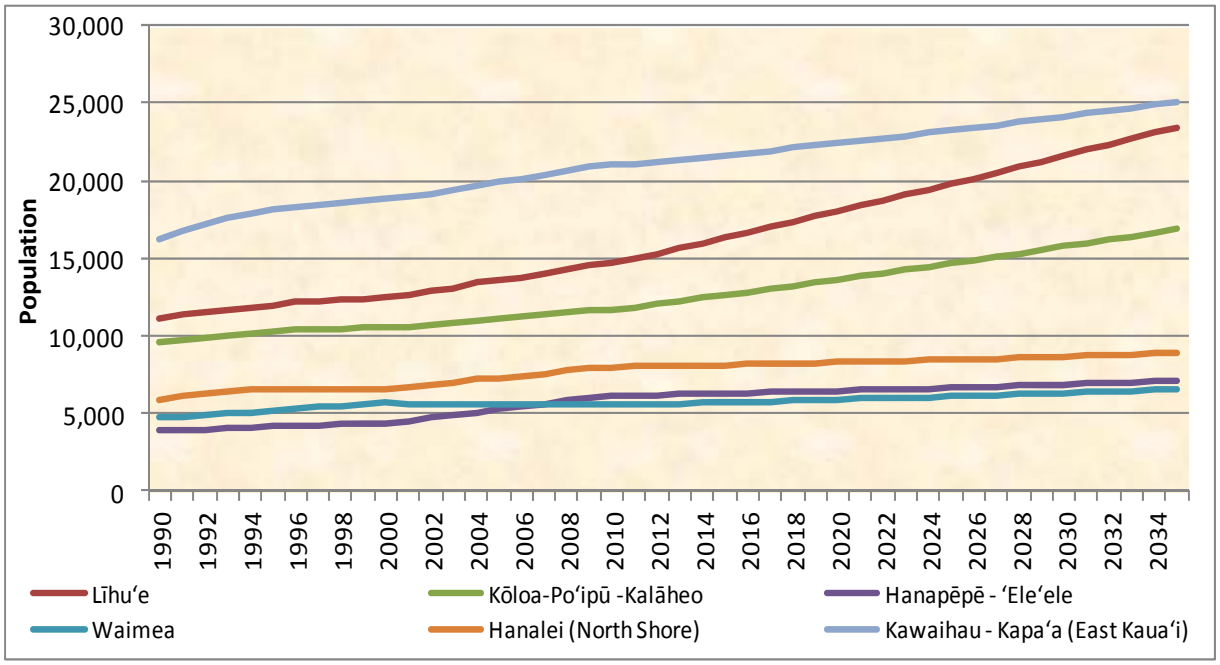

Table 2: Population of Kauaʻi County Planning Areas, 1990 to 2035

	Year					
	1990	2000	2010	2020	2030	2035
County of Kauaʻi	51,676	58,463	67,091	74,693	83,328	88,013
Līhuʻe	11,169	12,507	14,683	18,017	21,595	23,456
Kōloa-Poʻipū -Kalāheo	9,600	10,545	11,696	13,623	15,737	16,855
Hanapēpē - ʻEleʻele	3,873	4,362	6,157	6,463	6,860	7,094
Waimea	4,698	5,660	5,561	5,901	6,323	6,566
Hanalei (North Shore)	5,913	6,605	8,002	8,286	8,686	8,933
Kawaihau - Kapaʻa (East Kauaʻi)	16,192	18,784	20,992	22,403	24,128	25,110

According to this model, population will increase by about 50 percent by 2035. The Līhuʻe district had 21.9 percent of Kauaʻi's population in 2010 and is expected to house 26.6 percent in 2035. The Kōloa-Poʻipū-Kalāheo area had 17.4 percent of the county population in 2010 and will have up to 18.5 percent on 2035. The percentage of the County's population in each of the remaining district will decrease slightly by 2035.

Discussion

Based on our discussions with Kauaʻi planners and residents, the General Plan policy, and Department of Transportation long-range projections, we expect the majority of population growth to occur in the Līhuʻe and Kōloa-Poʻipū-Kalāheo regions. All planning areas will

experience some growth in the coming years and the relative size of district populations will change as we have described above.

HOUSEHOLDS

The number of households in the County is a function of the population in any given year and the average household size.

Definition

The U.S. Census Bureau defines a household as those persons who reside in a residential housing unit. Residents are defined as persons who report that the residence is their usual place of residence, sleep there most of the time, and take their meals there. Persons who reside at the housing unit for less than five months of the year are not considered part of the household. Households may be family households or non-family households, which can include some unrelated individuals. An important consequence of the definition is that the Census equates a household with an occupied housing unit.

Persons who do not live in households are classified as "In Group Quarters." Their number includes persons in institutionalized settings (hospitals, prisons, dormitories, nursing homes, etc.) and groups of unrelated individuals occupying a housing unit.

The household size is simply the number of individuals who reside in a given housing unit according to the definitions shown above.

Source

Historical data for the number of households on Kauaʻi was taken from the U.S. Decennial Census for Hawaiʻi in 1990 and 2000, and from the American Community Surveys for 2008 through 2011. Data from the Hawaiʻi Housing Planning Study, 1992, 1997, 2003, 2006, and 2011 were used to supplement this historical data. The same sources provide figures for household size and persons living in group quarters.

For years in which empirical data were unavailable, the number of households was calculated as the total population divided by the number of persons per household. As such, it is a function of both the level of growth suggested in the population projection and the assumptions shown below for the average number of persons per household.

Data for each of the planning areas were determined using the same strategy with correction factors to deal with rounding error and assure that tables crossfoot[4].

Persons per household data were obtained from the Decennial Census for 1990 and 2000. American Community Survey data was included for 2008 through 2011. Intra-decade models created by SMS for the Hawaiʻi Housing Planning Studies provided data for the remaining years.

[4] A numerical error checking technique that compares the sum of the columns with the sum of the rows.

Forecast for the County of Kauaʻi

The forecast method for Kauaʻi was developed carefully with the understanding that it is the link between population change and the change in the number of housing units required to house the new members of the population.

Forecast Method

The forecast method employed three steps:

1. Determine the number of persons per household, defined as the ratio of total persons in the population to total households

2. Forecast the persons per household

3. Divide the persons living in households by the average household size to arrive at the number of households.

In 1990, the Census reported that there were 432 persons living in group quarters on Kauaʻi (1.0%). In 2000, the percent in group quarters was nearly the same. The 2010 Census reported that there were 1,161 persons living in group quarters on Kauaʻi, about 3.6 percent of the total population. ACS figures varied significantly with a high of 6.3 percent in 2009 and a low of 1.3 percent in 2010. The figures are of little assistance. In the end, we adopted a strategy that defined the persons per household as the ratio of total persons in the population to total households as reported in the anchor years.

Projecting the ratio of persons to households (PPHH) is a more complicated matter. Over the years, the ratio on Kauaʻi dropped from 3.15 in 1990 to 2.87 in 2000. In 2010, the figure was 2.89 or very nearly the same as it was at the beginning of the previous decade. The ACS numbers were fairly constant between 2007 and 2009 at about 2.83 to 2.84. The 2011 figure was nearly the same as for the Census, 2.87. In general, the average number of persons per household on Kauaʻi has been relatively stable at about 2.83 to 2.89.

After discussions with other forecasters and analysis of existing data, we adopted the following high, medium, and low forecasting estimates:

Low estimate, 2.83: This level is about the same as existed on Kauaʻi in the last decade. It seems clear the ratio has risen in the present decade so using the low estimate would indicate a return to the patterns of that decade with its greater availability of housing units, less crowding, and perhaps less doubling up. It would increase the number of households for a given population figure.

Medium Estimate: 2.90: This estimate would indicate a continuation of the ratios reported for the first few years of the present decade. It suggests a tightening of the situation that causes people to live together in large numbers in a single household. It does not, however, suggest any significant decline in conditions that would cause continued increases in the number of persons per household.

High Estimate: 2.99: This estimate would suggest a noticeable increase in the ratio of persons to households. It brings Kauaʻi's ratio nearer to that reported by the Census for Oʻahu.

Forecast

Figure 3 and Table 3 show the household forecast for the County of Kauaʻi through the year 2035. The forecast is based on our medium estimate under which the ratio of persons to households would increase from 2.89 in 2010 to 2.90 in 2035. Using the ratio of total persons to total households tacitly assumes that the percentage of the population in group quarters will remain roughly the same throughout the forecast period. The line in Figure 3 tracks the household counts and the bars indicate the annual growth rate.

Figure 3: Households of Kauaʻi County, 1990 to 2035

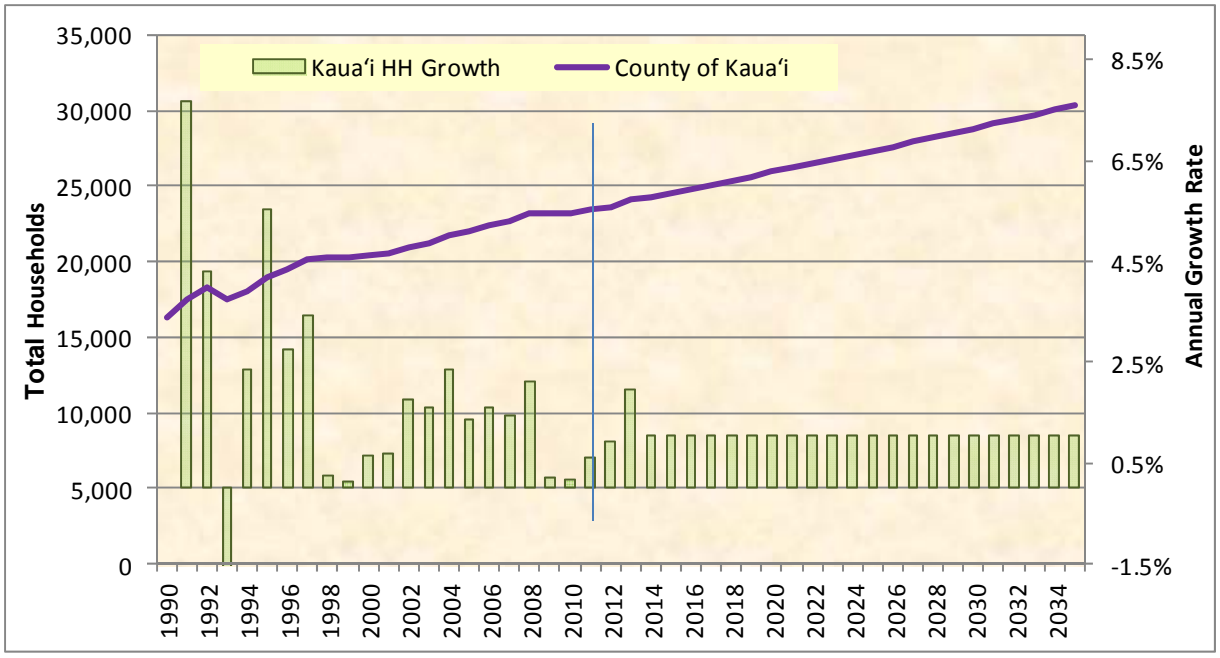

Table 3: Households of Kauaʻi County, 1990 to 2035

	Year					
	1990	2000	2010	2020	2030	2035
County of Kauaʻi	16,253	20,370	23,240	25,902	28,788	30,349
Annual growth rate		0.66%	0.18%	1.06%	1.10%	1.06%

Discussion

The total number of households in the County of Kauaʻi is projected to increase from 23,984 in 2013 to 30,349 in 2035. That represents a total growth of 31.2 percent between 2010 and 2035, or about 1.07 percent per year.

Forecast for the Kauaʻi County Planning Areas

Forecasting households for individual planning areas will result in estimates that are more reliable for the number of housing units that will be needed to house the projected County population.

Forecast Method

The method for developing the projected number of households for the six planning areas was essentially the same as for the County as a whole. Once again, the estimated number of persons in group quarters fluctuated widely and necessitated the use of the ratio of total persons to total households for calculations. The PPHH ratios were taken from empirical data available from the Census and ACS and projected for each district in proportion to the county ratios. A single estimate was generated for each of the individual district planning areas. The number of households in each district was calculated by dividing the population by the estimated number of persons per household for each area.

Forecast

Figure 4 and Table 4 show the results of the district forecasts for number of households using the medium estimates of PPHH and total persons per households. The figure shows the district historical data and forecasts, and the table presents the forecast number of households using the medium PPHH ratio.

Figure 4: Households of Kaua'i County Planning Areas, 1990 to 2035

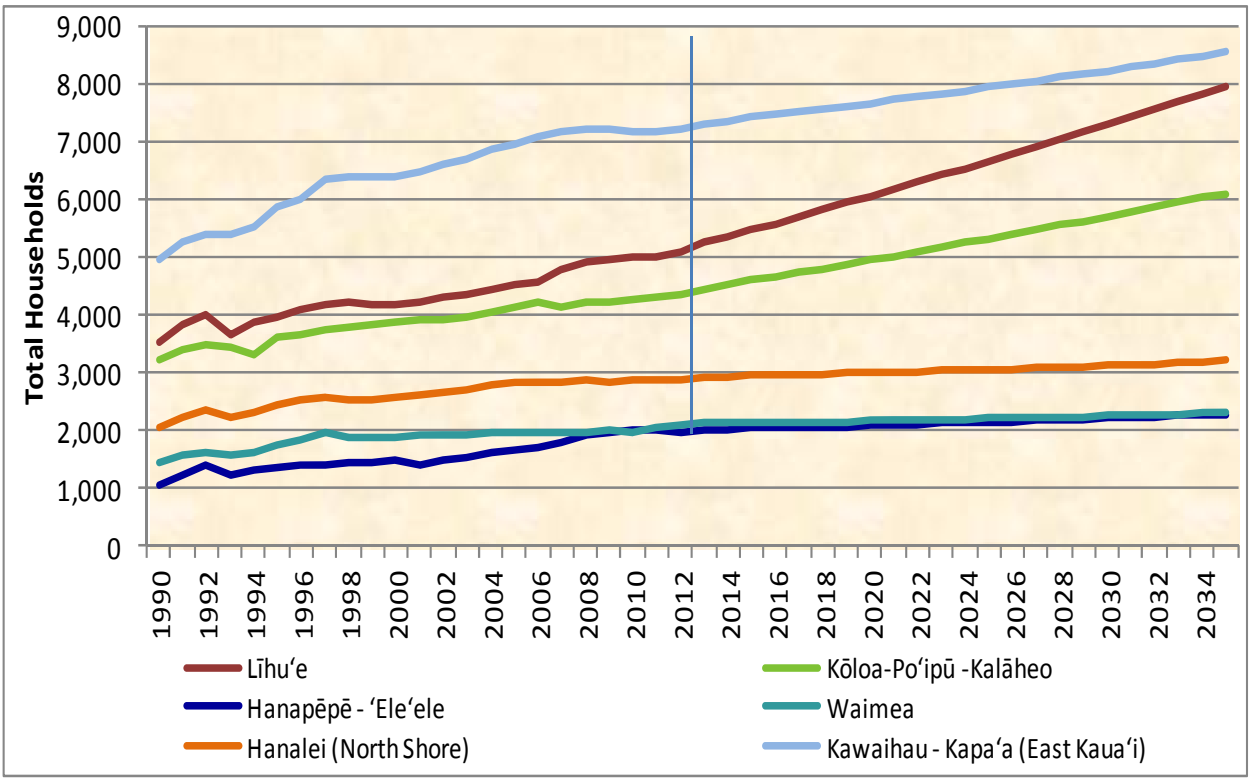

Table 4: Households of Kauaʻi County Planning Areas, 1990 to 2035

	Year					
	1990	2000	2010	2020	2030	2035
County of Kauaʻi	16,253	20,370	23,240	25,902	28,788	30,349
Līhuʻe	3,542	4,187	4,983	6,051	7,281	7,923
Kōloa-Poʻipū -Kalāheo	3,208	3,862	4,250	4,946	5,699	6,096
Hanapēpē - ʻEleʻele	1,035	1,491	1,987	2,084	2,207	2,279
Waimea	1,460	1,893	1,962	2,165	2,253	2,306
Hanalei (North Shore)	2,070	2,552	2,881	2,998	3,123	3,201
Kawaihau - Kapaʻa (East Kauaʻi)	4,937	6,385	7,177	7,658	8,224	8,545

Discussion

As with population, the Līhuʻe Planning District is likely to see a larger increase in total households than the other districts. Līhuʻe, which is identified by the General Plan policy as a growth center, is expected to increase its number of households by 48 percent during the next two-and-a-half decades. This equates to an average annual increase of 1.7 percent. Kōloa-Poʻipū-Kalāheo (1.2 percent) is the only other district expected to exceed the County's average annual growth rate of 0.8 percent for households between now and 2035. The remaining districts are anticipated to have average annual growth rates of 0.7 percent or less.

JOBS AND EMPLOYMENT

Forecasting jobs and employment links population growth to economic growth. Employment is driven principally by the fact that there are individuals in the population who are qualified to take the jobs. The more people there are, the more jobs will be needed and taken. Jobs are produced when an expanding population causes increases in consumer spending. Employment caused increased consumer spending.

The task described in the forecasting scope of services was to forecast jobs. The design phase of the project made it clear that it would be more effective and more accurate to project jobs and employment in the same system. In this section we cover both of those forecasting procedures and their results

Definition

Total wage and salary jobs includes all employment for which workers are paid a salary or wage. Self-employed positions are excluded from these counts. Data are reported as a number of jobs that exist, whether or not they are occupied for the duration of the year. Jobs may also be shared by more than one individual.

Persons employed is defined as the number of individuals 16 years if age or older who are employed for wages outside the home, either full-time or part-time, in any given time period. Employed persons may have more than one job. Both measures fluctuate over time and are reported as the average number of job or employed persons over the course of a year.

Note that jobs are distributed according to the place of employment, while employment is distributed according to the residences of the employed persons.

Sources

Empirical data for the total number of wage and salary jobs in the County of Kaua'i were extracted from the U.S. Census County Business Patterns[5] for the period from 2004 through 2010. Distribution of Kaua'i wage and salary jobs across districts is from DBEDT Data Book for years before 2012. Civilian wage and salary employed persons was taken from DBEDT's data time series[6].

Forecast for the County of Kaua'i

The forecasting strategy was to link the DBEDT job forecasts to Census data for the Island of Kaua'i to produce reasonable and flexible forecasts for jobs and employment. The DBEDT forecast was developed by forecasting jobs by individual industries using the economic growth model for the State. Total State jobs were allocated to the Counties using historical data on percent of jobs in each industry at each County. The State level jobs projections thus reflect economic growth projected for the County[7].

Forecast Method

The forecasting procedure was carried out in series of steps described here. The annual data on population and jobs were modeled to generate the number of employed persons from the total population. That procedure produced projections for employment and unemployment. The number of employed persons was multiplied by the ratio of employed persons to jobs to arrive at the projected number of jobs each year during the forecast period.

The first step was to estimate the pool from which all employed persons are taken – the number of persons 16 years of age or older. Historically, the labor pool grew from 74.2 percent of the population in 1990 to 76.8 percent in 2000 and 80 percent in 2010.

Our three forecasting levels were set as follows:

Low estimate, 76%: This level suggests that the eventual size of the pool will return to its 2000 level. It would suggest that the number of young adults will increase slightly over the next 25 years and the pool of labor eligible persons will shrink somewhat.

Medium Estimate: 78%: This estimate projects that the percent of persons 16 and over will remain the same as it is now. It is our preferred estimate.

High Estimate: 80%: This estimate suggests that the percent of Kaua'i's population eligible for work will grow at about a third of the 2000-to-2010 growth. That would result in two

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5 County Business Patterns (CBP) is an annual series that provides sub-national economic data by industry. This series includes the number of establishments, employment during the week of March 12, first quarter payroll, and annual payroll. This data is useful for studying the economic activity of small areas; analyzing economic changes over time; and as a benchmark for other statistical series, surveys, and databases between economic censuses. http://www.census.gov/econ/cbp/

6 Empirical DBEDT Data book Time Series, Table 12.07, Employment Status of the Civilian Labor Force, by County: Annual Average, 1990 to 2011.

7 Forecasting economic growth was outside the scope of this forecasting project. It was useful, however, to include the job-producing impact of growth on jobs and employment forecasts. Estimates of economic growth can be applied to this model to adjust jobs and employment forecasts as needed

.

points of growth in 25 years. The under-16 component of Kaua‘i’s population will continue to decrease and the labor-eligible component will increase.

The labor force participation rate (LFPR), discussed frequently in the national debate over unemployment and job counts, is the percentage of the labor force eligible pool minus persons who choose not to participate actively in job hunting. Those persons are not part of the labor force and are not used in calculating employment. Kaua‘i’s LFPR was .81 in 1990, .67 in 2000, and declined again to .63 in 2010. Persons not in the labor force tend to reflect both the current state of the job market and the profile of the labor force eligible pool. When jobs are scarce, some jobless people move out of the labor force to wait out the downturn. They tend to return to the labor force when the number of jobs increases. The pool also contains persons who are eligible according to the Census definitions, but because of age, disability, illness, lack of qualifications or personal choice, are not actively engaged in the labor market. Many of these, especially retired persons and senior citizens may not return to the labor force in good times. The former category tends to be part of the short-term fluctuation in the labor markets – the distribution around true straight-line projections in our forecast. The latter category tend to be associated with the trend itself, so our forecasts lines will be affected to a greater extent by the relative numbers of elderly, retired and disabled persons in the population

Our three forecasting levels were:

Low estimate, 58%: This level suggests that the labor force participation rate will decline by another five points between 2010 and 2035. There will likely be periods of slow and faster economic and job growth during the forecast period and we postulate they will be offsetting. The trend toward an older population would continue because of an excess of births over deaths and continued to outmigration of younger people. This scenario is a real possibility for Kaua‘i and the low estimate allows us to consider at that situation.

Medium Estimate: 61%: This estimate projects that the LFPR will drop by two percentage points over the next 25 years.

High Estimate: 67%: This estimate suggests that the LFRP will return to the level recorded in 2000. This might be due to a net improvement in Kaua‘i’s economic fortunes, but would require a reversal of current demographic trends on the Island.

Finally, we removed unemployed persons from the labor force to produce the estimated number of persons employed in wage and salary jobs in any given year. This requires estimating a reasonable estimate of the unemployment rate for the forecast period. The unemployment rate for Kaua‘i has varied greatly. It reached its low point (2.5%) in the boom years of 2005, 2006, and 2007. Unemployment was at 13.5 percent in 1993 after the hurricane struck. In the census years, the unemployment rate rose from 3.6 percent 1990 to 4.4 percent in 2000 and 8.5 percent in 2010. Since there is no upper age limit on the pool, its growth reflects a decline in the number of children in Kaua‘i’s population.

Our three forecasting levels were set as follows:

Low estimate, 3.5%: The unemployment rate is about one point higher than the best economic years for Kaua‘i over the last two decades. This level would produce very high employment.

Medium Estimate: 5%: The unemployment rate is set at the average for the last decade.

High Estimate: 7%: The unemployment rate is set at the average rate for the last two decades, including the post-Iniki recovery years.

The next task was to move from estimating employment to generating job count forecasts. The total labor force minus the number of unemployed persons equals the number of persons employed in wage and salaried jobs in the County. The ratio of employed persons to jobs can be used to estimate an appropriate number of jobs for the population and economy. The ratio for employment to jobs is usually greater than one. That suggests there are more jobs than employed persons because some employed persons have more than one job. If the ratio were less than one, there would be more jobs than employed persons. The situation is possible, but would not be sustainable. Surplus jobs would increase employment in the existing labor force, increase labor force participation, or increase the labor force eligible population by generating in-migration.

Kaua‘i’s ratio of employment to jobs was at its lowest point in 1990 when it was calculated at .95. In 2000, the ratio was at its highest point (1.09) and it declined to 1.07 in 2010.

Three forecasting levels were established at the following levels:

Low estimate: 1.05 The ratio of employed person to jobs is set at 1.05, the average for the last decade.

Medium Estimate: 1.07 This level is the empirical level calculated for 2010.

High Estimate: 1.10: This ratio is slightly higher than the level recorded for the years 2000.

Forecast

Figure 5 and Table 5 show the baseline jobs forecast for the County of Kaua‘i through the year 2035. The line in Figure 5 tracks the total number of jobs and the bars indicate the annual growth rate. All parameters of the model described above – percent of the population 16 years of age or older, labor force participation rate, unemployment rate, and the ratio of employed persons to jobs – were set at their medium levels.

Figure 5: Total Wage and Salary Jobs in Kaua'i County, 1990 to 2035

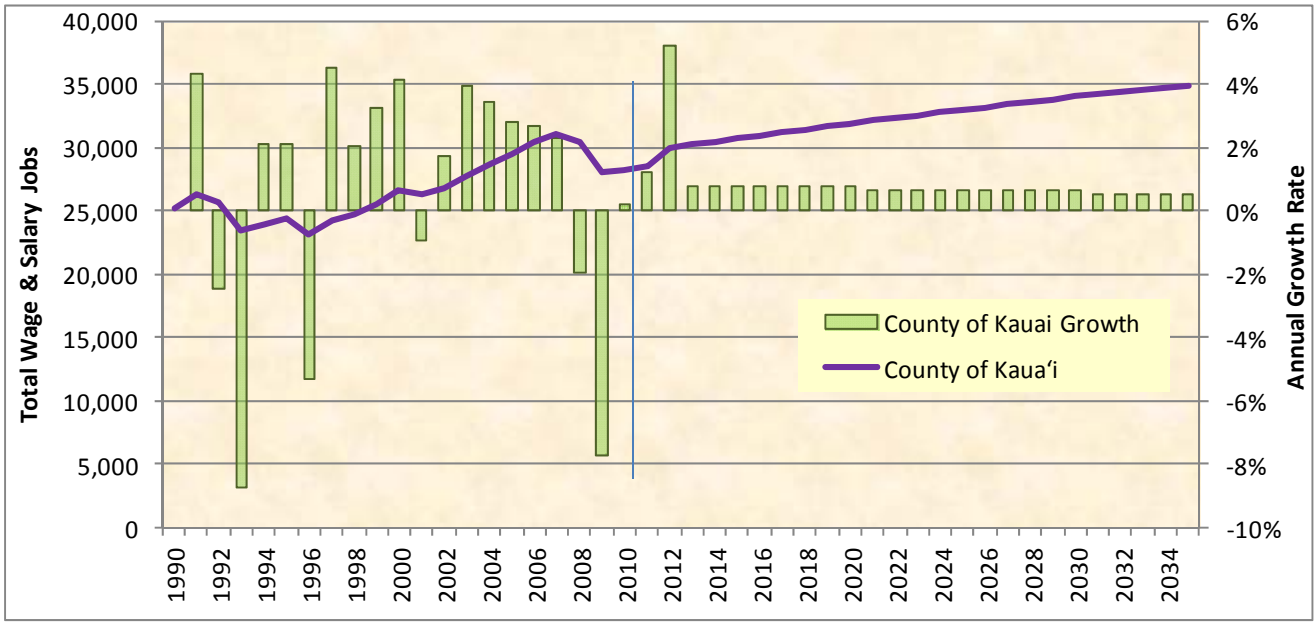


Table 5: Total Wage and Salary Jobs in Kaua'i County, 1990 to 2035

	Year					
	1990	2000	2010	2020	2030	2035
County of Kaua'i	25,250	26,550	28,150	31,900	34,000	34,900
Average annual growth rate		0.51%	0.60%	1.33%	0.66%	0.53%

Discussion

Average annual job growth for the County of Kaua'i is expected to equal 0.79 percent during the next seven years. Between 2020 and 2030, job growth is expected to occur at an average annual rate of 0.66 percent. The rate is expected to dip again to 0.53 percent during the period between 2030 and 2035, adding less than 1,000 jobs.

Forecast for the Kaua'i County Planning Areas

The total number of wage and salaried job and the number of persons employed in wage and salaried jobs were modeled according to the procedures described in the previous section of this report. That is, for each District, the figures for jobs, employment, and the population dynamics were balanced. Jobs were allocated across the six district planning areas according to the number of persons employed in business establishments located within district boundaries[8].

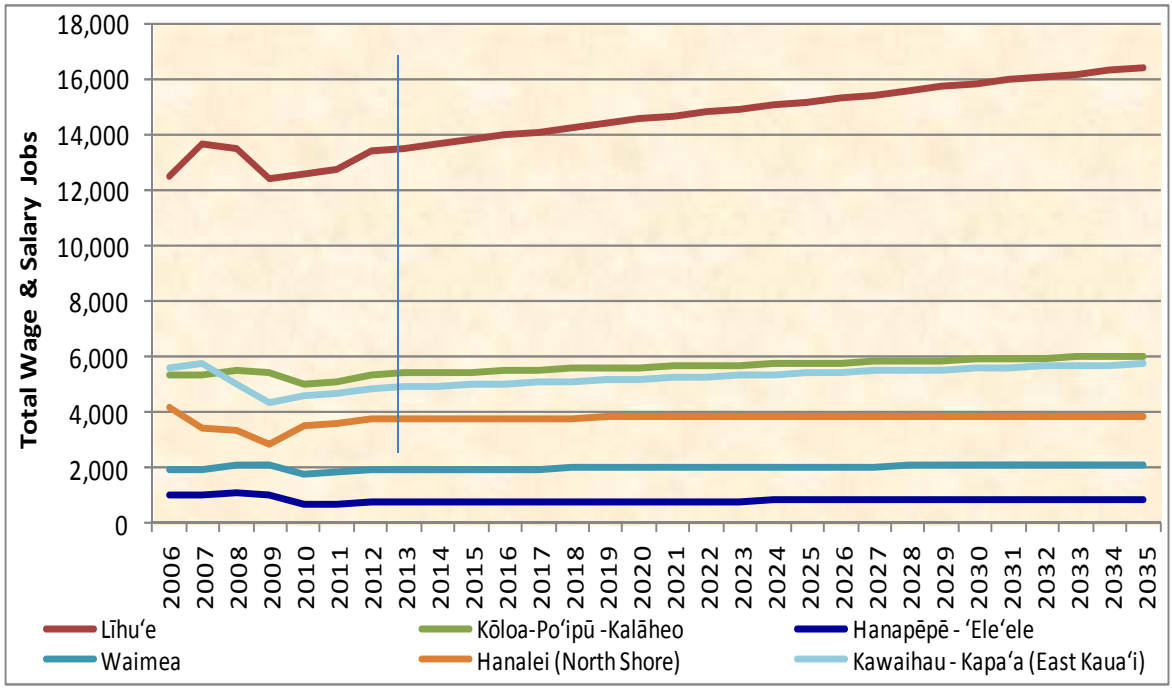
[8] Separate distribution allocations were made for employment. Those estimates were allocated to districts according to the number of district residents who were employed, regardless of the location of their employment. Those results are not recorded here.

Forecast Method

The method for developing projected number of jobs in each of the six planning areas was essentially the same as for the County as a whole. The model parameters were calculated to reflect the conditions in each district and results were balanced such that the sum of jobs in the six districts was equal to the total jobs in the County. The historical data for jobs in each district was taken from U.S. Census Bureau County Business Patterns data[9], which provides the number of establishments and the number of employees in each zip code. We have produced estimate only for the medium levels of each of the model parameters. We did not calculate individual high, medium, and low estimates for individual district planning areas.

Forecast

Figure 6: Jobs in Kauaʻi County Planning Areas, 2006 to 2035



[9] http://www.census.gov/econ/cbp/

Table 6: Jobs in Kauaʻi County Planning Areas, 2006 to 2035

	Year				
	2000	2010	2020	2030	2035
County of Kauaʻi	30,350	28,150	31,900	34,000	34,900
Līhuʻe	12,473	12,554	14,519	15,820	16,403
Kōloa-Poʻipū -Kalāheo	5,299	5,027	5,617	5,892	6,003
Hanapēpē - ʻEleʻele	999	695	779	821	838
Waimea	1,888	1,791	1,986	2,064	2,094
Hanalei (North Shore)	4,143	3,513	3,801	3,839	3,839
Kawaihau - Kapaʻa (East Kauaʻi)	5,548	4,570	5,199	5,565	5,724

Discussion

Between 2010 and 2035, average annual job growth for Kauaʻi's six planning districts is expected to range from 1.23 percent for Līhuʻe to 0.37 percent for the Hanalei (North Shore) district.

During the next seven years, Līhuʻe is expected to have an average annual job growth rate of 1.06 percent. In the following decade, this rate is projected to be slightly lower (0.90% per year) and between 2030 and 2035, Līhuʻe's anticipated annual growth rate for jobs will be 0.74 percent.

The Līhuʻe Community Planning Area has traditionally had the plurality of wage and salaried jobs on Kauaʻi. Table 6 shows that that situation is expected to continue for the next 25 years. The Kōloa-Poʻipū-Kalāheo District and the Kawaihau-Kapaʻa Districts have the next level of jobs in the County – roughly 35 percent of the job count for Līhuʻe. Results of the current model suggest that Līhuʻe's job growth rate will be higher than for the other districts. This is caused by the interaction of the historical number of jobs located there, and the expectation that population growth will be higher than for other districts.

Over the last two decades, a substantial number of Kauaʻi jobs have been generated within the visitor industry (arts, entertainment, recreation, accommodations, and food services). While Līhuʻe has had fewer of these jobs than the rest of the County (20% vs. 22% in 2010), the difference is not large. On the other hand, Līhuʻe District has had larger shares of non-visitor jobs in several areas, including retail trade (18% vs. 12%), transportation, warehousing and utilities (8% vs. 5%), finance insurance and real estate (7% vs. 5%), public administration (7% vs. 5%), wholesale trade (3% vs. 2%), and the information industry (3% vs. 1%). Most of the types of jobs projected to increase by DBEDT are included in the job types listed above. It seems reasonable to assume that Līhuʻe will continue to hold its position as the center for employment in the County and to increase the percentage of new jobs compared to other districts.

HOUSING UNITS

Definition

A housing unit is a house, an apartment, a mobile home, a group of rooms, or a single room that is occupied (or if vacant, is intended for occupancy) as separate living quarters.

Source

In the present model, empirical data concerning the number of housing units on Kauaʻi was taken from the Decennial Census for 1990 and 2000, from American Community Surveys between 2008 and 2011, and from Hawaiʻi Housing Planning Study for the interim years.

For the individual planning district areas, historical levels of occupied housing units, seasonal units, and vacancy rates were taken from the Census and ACS data independently for each district.

Forecast for the County of Kauaʻi

Forecast Method

The total number of housing units is equal to the number of available housing units plus those housing units not available to the residential housing market. The number of available housing units was defined as vacant housing units plus occupied housing units. As noted in the information regarding households, occupied housing units is equal to the number of households.

The number of housing units is, therefore, a function of the total population for Kauaʻi and assumes that housing production will respond to demand. Any inequalities between supply and demand are accounted for by changes in household size (crowding and doubling up), and by changes in unoccupied housing units, vacancy rates and unavailable units. While housing prices also play a significant role in determining both the supply and demand for housing units, that data is not incorporated into the current forecast.

The forecasting model parameters allow for changes in the percentage of unavailable units (seasonal, migrant, and other) and vacancy rates (owner and rental; vacant for sale/rent and sold/rented but unoccupied) in the housing stock. This parameter is currently set at 16.4 percent of total housing units. Kauai's unavailable unit stock grew from 4 percent in 1990 to 16.4 percent in 2000, and has remained unchanged since then.

Forecast

Figure 7 and Table 7 show the baseline population forecast for the County of Kauaʻi through the year 2035. The line in tracks population numbers and the bars indicate the annual growth rate.

Figure 7: Housing Units in Kaua'i County, 1990 to 2035

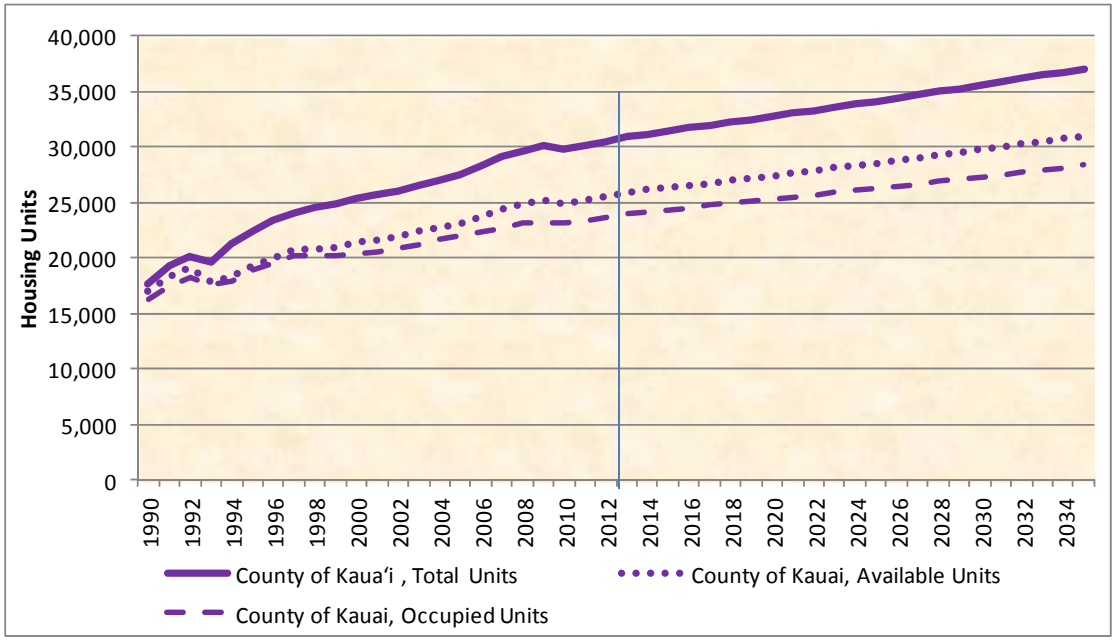


Table 7: Housing Units in Kaua'i County, 1990 to 2035

	Year					
	1990	2000	2010	2020	2030	2035
County of Kaua'i , Total Units	17,613	25,331	29,793	33,553	37,519	39,676
County of Kauai, Available Units	16,985	21,398	24,915	28,085	31,379	33,169
County of Kauai, Occupied Units	16,253	20,370	23,240	25,902	28,788	30,349
Average annual growth rate		4.4%	1.8%	1.3%	1.2%	1.1%

Discussion

The total number of housing units for the County of Kaua'i is projected to increase from 29,793 in 2013 to 39,676 in 2035. That represents a total growth of 33.1 percent between 2010 and 2035, or about 1.2 percent per year. The level of growth will maintain the average number of persons per household at the present level.

Forecast for the Kaua'i County Planning Areas

Forecast Method

The total number of housing units forecast for the six planning districts was allocated according to the projected population growth and proportion of the County's total housing units for each area in 2010. Each district's proportion of Kaua'i's total housing units was essentially maintained, with only minor adjustments made to ensure that the sum of the districts was equal to the County's total housing units each year.

Thus, housing unit supply is tied to household formation and to population growth patterns established in earlier steps of the model, and distribution is according to expected population growth patterns across districts.

Forecast

Figure 8: Housing Units in Kauaʻi County Planning Areas, 1990 to 2035

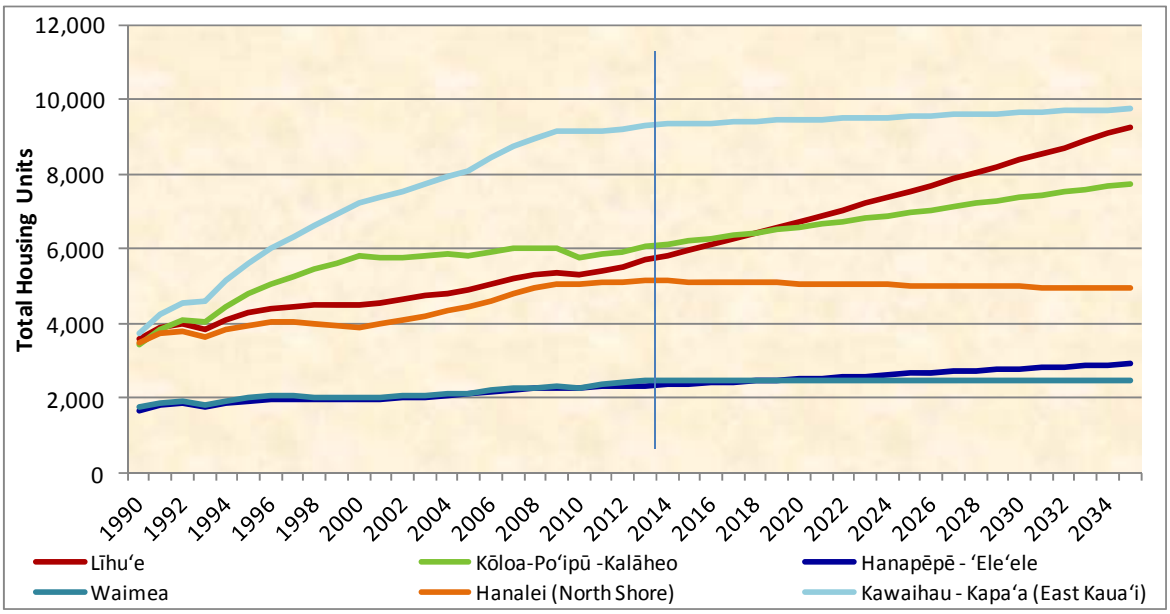


Table 8: Housing Units in Kauaʻi County Planning Areas, 1990 to 2035

	Year					
	1990	2000	2010	2020	2030	2035
County of Kauaʻi	17,613	25,331	29,793	33,553	37,519	39,676
Līhuʻe	3,562	4,501	5,296	6,916	8,846	9,900
Kōloa-Poʻipū -Kalāheo	3,442	5,780	5,764	6,748	7,766	8,292
Hanapēpē - ʻEleʻele	1,669	1,942	2,240	2,563	2,921	3,120
Waimea	1,734	1,997	2,262	2,506	2,599	2,652
Hanalei (North Shore)	3,470	3,896	5,066	5,167	5,235	5,284
Kawaihau - Kapaʻa (East Kauaʻi)	3,736	7,215	9,165	9,653	10,153	10,428

Discussion

The highest level of growth is expected to occur in the Līhuʻe planning district, where the total number of housing units is anticipated to increase by 86.9 percent between 2010 and 2035. Growth among the other five planning districts is expected to be more moderate.

VISITORS

Kauai's visitor industry is the largest sector of the Island's economy. It regularly accounts for about 33 percent of the County's total output[10], generates more than a quarter of the jobs on Kauai, and contributes substantially to the county tax revenues[11]. It has been the County's objective to diversify the local economy and thereby reduce the dominance of any single industry on total economic output. The visitor industry has, however, maintained significant – albeit volatile – growth over the last thirty years and remains a major part of the economy

Kaua'i's attractiveness as a visitor destination is the keystone of the industry's vitality. Over the last decade, the industry drew about 1.1 million visitors per year. Direct visitor spending for an average year in the first decade of this century was about $1,087 million and DBEDT's visitor industry Input-Output model shows that the indirect and induced effects of visitor expenditures increased the total visitor industry value at two times that figure.

Off-setting the economic value of the visitor industry, tourism can have negative consequences as well as positive ones. The Island's million-plus visitors place stress on local infrastructure and increase the demand for public services. With an average length of stay of about seven days per visitor party, visitors arriving on Kaua'i created an average daily visitor census of 22,000 visitors, enough increase Kaua'i's population by as much as 22 percent on any given day and raising the resident population from 67,091 to a *de facto* population of 82,101. Clearly, a working forecast of the number of visitors is needed to guide the County's long-range planning.

Definition

Visitor arrivals are defined as the total number of individuals arriving from domestic and international points of departure by air and sea during a calendar year. Their number includes men, women, and children visiting from all ten of Hawai'i's major market areas (MMAs). Total visitor arrivals include both day-trippers and overnight or longer visitors. By convention, visitors staying for more than 365 days are considered temporary residents.

In Hawai'i, the responsibility for counting visitors, measuring their characteristics, and estimating their expenditures rests with the Hawai'i Tourism Authority's (HTA) Visitor Research Division. To generate the Visitor Data Series, HTA administers two surveys, domestic and international, to airline passengers to identify residents and tourists on flights. Visitors arriving by sea are measured in the Cruise Survey. For visitors by air and sea, the initial counts are taken from official passenger records. HTA subtracts returning and intended residents to arrive at the visitor counts and uses survey data to estimate visitor characteristics and behaviors. The visitor data have been maintained by HTA and its predecessors since the end of World War II. Current series methods date to about 1995.

These visitor counts have traditionally served as the primary measure of demand for goods and services in the visitor industry for Hawai'i and its four counties.

Forecast Method

[10] Total output is an I-O Modeling concept equivalent to a county gross domestic product.

[11] Including the visitor industry contributions to the real property tax, the share of the transient accommodations tax returned to the counties, and the net intergovernmental payments from the GET tax base.

The empirical data for the historical part of the forecasting model were taken from Hawai'i Tourism Authority, Annual Visitor Research Reports, 2000 to 2011 and the DBEDT Data Book historical database for years before 2000. DBEDT has also made available a long-range forecast for visitor arrivals at the State and County levels[12]. Hawai'i's State Planning system is a centralized planning effort that generally relies on statewide forecast as baseline data for County General Plans. The present forecasting model begins from the DBEDT forecast data. Short-range visitor forecasts from several sources, including DBEDT Quarterly Projections[13], Bank of Hawai'i, and UHERO were used to model visitor arrivals for the period between 2011 and 2013.

Forecast for the County of Kaua'i

Figure 9 and Table 9 show total visitor arrivals by air for the County of Kaua'i through the year 2035. The line in Figure 9 tracks visitor numbers and the bars indicate the average annual rates of change.

Figure 9: Visitors Arrivals to Kaua'i County, 1990 to 2035

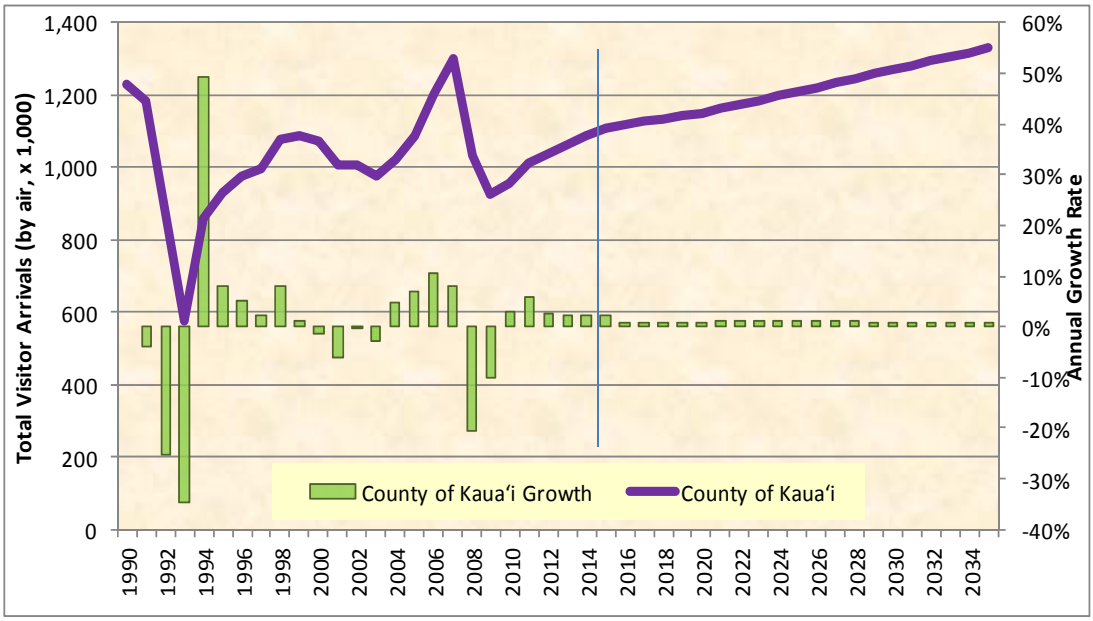
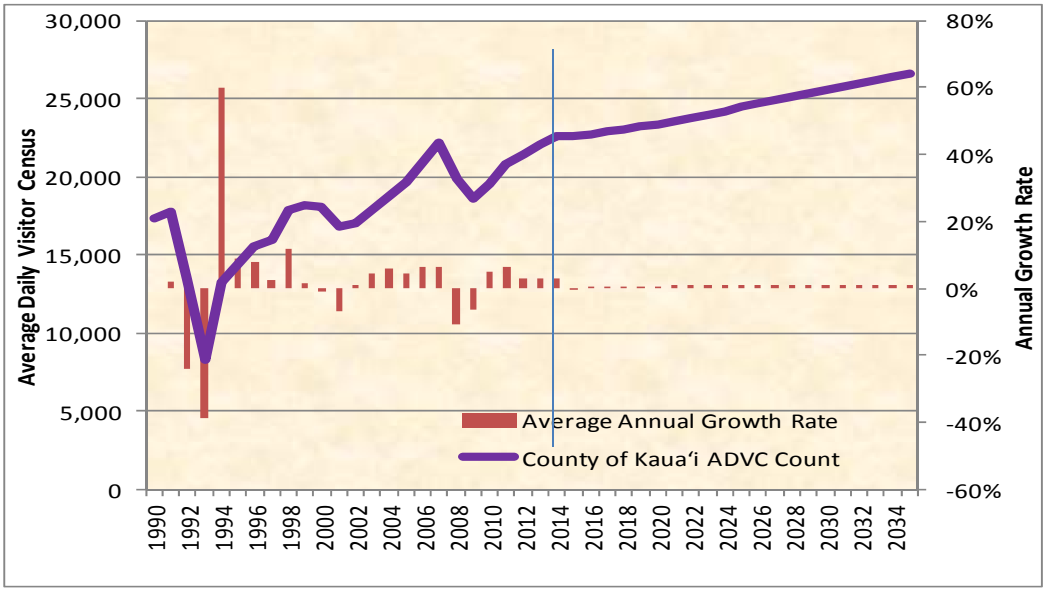


Figure 9a represents visitors to Kaua'i as the Average Daily Visitor Census (ADVC). This is an alternate way to assess the volume of visitors to the County.

[12] Population and Economic Projections for the State of Hawaii to 2040, DBEDT 2040 Series, Research and Economic Analysis Division, Department of Business, Economic Development and Tourism, March 2012

[13] http://dbedt.hawaii.gov/visitor/tourismforecast/

Figure 9a: Average Daily Visitor Census in Kaua'i County, 1990 to 2035



Historically, visitor arrivals have been very volatile on Kaua'i. Arrivals grew from relatively low levels in the early eighties to the series peak in 1990. Hurricane Iniki devastated the tourism infrastructure on Kaua'i, causing a deep rift in 1993 and a lengthy recovery period. At the next peak in 1999, Kaua'i had regained less than 90 percent of its former visitor count. After another drop following September 11, 2001, the count grew to its second peak in 2007, then fell sharply again in 2008-2009 and have been climbing out at a slower pace than the post-Iniki recovery.

In the long run, the volatility is less evident. Between 1990 and 2000, the post-Iniki era decade, arrivals were down 13 percent, equal to an average annual rate of change of 1.3 percent. Between 2000 and 2010, with its 2007 peak and 2009 trough, the visitor count grew by a net 3.8 percent, but the average annual growth rate was nearly flat. We might think of the average annual growth figures as being much like a trend-line through the highly volatile period between 1990 and 2010.

Table 9: Visitor Arrivals to Kaua'i County, 1990 to 2035

	Year					
	1990	2000	2010	2020	2030	2035
County of Kaua'i (x 1,000)	1,229	1,075	1,033	1,186	1,278	1,327
Average annual growth rate		-1.25%	-0.39%	1.48%	0.78%	0.76%

The current forecast shows an overall growth of about one percent per annum between 2010 and 2035. It decreases very slightly across that period. The forecast represents a trend line for visitor arrival growth through the forecast period. Based upon historical data, we can expect some form of disrupting event in the visitor industry every five to ten years. That means the real path that visitor arrival counts will take on Kaua'i is likely to have its significant ups and downs just as it did in the last 25 years. Overall, the average growth rate will be about one percent a year.

That is notably higher than the Post-Iniki decade rate and about a point higher than the last decade with one peak (2007) and two troughs (post-September 11 and the Great Recession of 2008). Discussions with DBEDT remind us that their State and County visitor projections are largely demand driven. Growth is expected because the trends tell us that people want to visit Kauaʻi in larger numbers every year. Certainly Kauaʻi's experience in the last three years suggests that is so. The rate of recovery on Kauaʻi has been somewhat slower than in other counties but is substantially higher than one percent per annum. That would seem to make the DBEDT visitor arrivals long-range projection a relatively conservative estimate for the forecast period.

Forecast for the Kauaʻi County Planning Areas

Forecasting the visitor arrivals for district planning areas requires a different way of looking at visitor arrivals. According to the definition presented above, all visitor arrivals would be charged to the Līhuʻe Community Planning Area. Līhuʻe has both the airport and the harbor, so all "arrivals" occur there.

Early discussions with County officials and stakeholders identified an interest in having some indicator of how visitors, with their advantages and disadvantages, might affect people and businesses in each of the six planning areas. It was decided that a reasonable way to allocate visitor impact might be according to the place where they stay. The current model allocated Kauaʻi visitors according to the number of visitor accommodations units located in each area. While the measure is an imprecise one, it is preferable to other alternatives.

The number of visitor accommodations units was taken from the HTA 2012 Visitor Plant Inventory. Units were assigned to the six planning areas according to their address. Figure 10 and Table 10 show the results of that method.

Figure 10: Visitor Arrivals for Kauaʻi County Planning Areas, 1998 to 2035

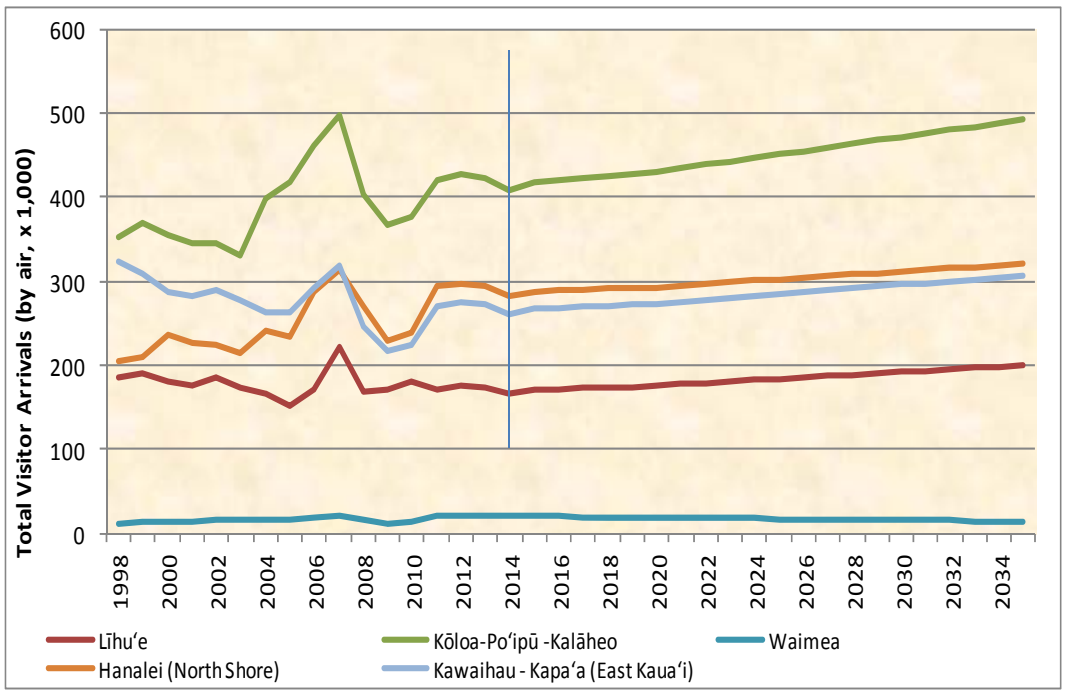


Table 10: Visitor Arrivals for Kauaʻi County Planning Areas (x1,000), 1998 to 2035

	Year					
	1998	2000	2010	2020	2030	2035
County of Kauaʻi	1,078	1,075	1,033	1,186	1,278	1,327
Līhuʻe	186	182	180	181	193	199
Kōloa-Poʻipū -Kalāheo	353	355	377	444	475	491
Hanapēpē - ʻEleʻele	-	-	-	-	-	-
Waimea	12	15	13	19	16	14
Hanalei (North Shore)	204	236	239	302	314	320
Kawaihau - Kapaʻa (East Kauaʻi)	324	287	224	282	298	306

Discussion

The historical data show that the visitor "arrivals" as they would be distributed on the first night of their stay on Kauaʻi. At first reading, it seems reasonable. The largest numbers take rooms in the Kōloa-Poʻipū-Kalāheo district, followed by North Shore (Princeville) and Kapaʻa. The Līhuʻe Planning Area is in fourth place. Very few visitors stay in Waimea-Kekaha, and none were assigned to Hanapēpē - ʻEleʻele.

The forecasts for individual districts were also based on the number of visitor accommodations units within each district. It is clear that rates of change are slightly for areas with larger number of visitor units. It is also true that any growth in visitor units will likely occur in the top four districts because those districts are home to Kauaʻi's major Visitor Destination Areas (VDAs).

Overall, the net rate of growth in visitors at each district remains at approximately one percent per year.

VISITOR UNITS

Data on the number and types of visitor accommodations units in Hawaii and its counties is recorded in the HTA Visitor Plant Inventory (VPI). This annual publication has been the authoritative sources on visitor plant since its inception. When the VPI was initially developed the marketplace for visitor units was simple and straightforward. Throughout the two decades that followed, many new types of units appeared with new type of ownership and contracting. The procedures designed to inventory the State's visitor plant were changed frequently to accommodate these changes[14].

Definition

Visitor units are defined as available accommodations units intended to house non-resident persons on a temporary basis[15]. Visitor unit types include apartment hotel, bed & breakfast,

[14] Hawaii Tourism Authority, Visitor Plant Inventory, 2012, Introduction.

[15] "Temporary" can be measured in several ways. Here we use the Visitor Plant Inventory definition, less than 100 days.

condominium hotel, hotel, hostel, individual vacation unit, timeshare, and "other" units. Along with their several subclasses[16], the definition includes all units available to Hawaii's visitors as of May 1 each year.

The inventory changes from year to year in several ways. The number of units increases as new visitor units come online. The number of units can decrease when existing units are taken offline (usually temporarily for refurbishing or to accommodate an ownership transfer). The number may increase when residential rental units are converted to visitor rentals, or decrease as visitor units are converted to residential rentals. Visitor accommodations can also change classification in a variety of ways and this may occur frequently.

There are some inherent difficulties in counting visitor units and, therefore, in projecting the number of units needed in the future. While the Hawaii Tourism Authority (HTA) does a great deal of work to produce the annual Visitor Plan Inventory (VPI), Individual Visitor Units (IVUs) may not be surveyed because they are not registered. Further, the survey occurs once a year and little is known about occupancy or conversion that may happen within the year. Efforts are currently underway to refine the visitor accommodation counts, which may result in the ability to adjust visitor unit projections in the future.

The hotel occupancy rate is measured on a weekly basis by Hospitality Advisors LLC. The occupancy rate is the number of units occupied by visitors during the week divided by the total available units during the week. Higher occupancy rates indicate a greater numbers of visitors being housed in the existing inventory. .

Source

The historical data for Kaua'i's visitor counts was taken from empirical data from DBEDT and Hawai'i Tourism Authority's Visitor Research Division, primarily the Visitor Plant Inventory annual reports. For years in which empirical data were not available, the estimated number of visitor accommodations units was calculated as the average daily visitor census multiplied by the estimated number of persons per room.

The average daily visitor census is equal to the total number of visitors arriving on Kaua'i by air and ship multiplied by the average length of stay in days, then divided by the 365 days in a year. The average number of visitors per room is empirical and represents a simplified method for dealing with party size and occupancy rates across different types of visitor accommodations -- hotels, condominium hotels, timeshare units, bed & breakfast units, apartment hotels, hostels, and individual visitor units (IVUs).

Forecast Method

The forecast for visitor units begins with the number of visitor arrivals in any given year. The assumption is that visitor unit supply will respond to visitor demand for accommodations. The visitor arrival forecast is first transformed to an estimated average daily census by dividing total visitor arrivals by the average party size and multiplying that result time 365, the number of days in a year. The average daily census is then divided by the number of persons per room to arrive at the estimated number of visitor accommodations units on Kaua'i during each forecast year.

[16] Timeshare units may be measured as rooms or keys (some units can be rented to more than one party by locking out part of the master unit – hence "keys"), and IVUs can be classed as IVU house, IVU cabin, IVU villa, etc.

The average length of stay (LOS) for a visitor party in Hawaii was 9.38 days in 2011. Kaua'i visitors' average stay was 7.51 days. Visitor LOS on Kaua'i was at its lowest point in 1990 at 6.14. The LOS rose to 6.8 in 2004 and then fell to 6.24 in 2007. Length of stay has increased steadily for Kaua'i visitors since 2007.

In general, the LOS seems to be countercyclical to the visitor industry economy. In good times it falls and in tight markets it rises. Some observers have suggested that is true because in recessions the average daily census (ADC) contains a higher percentage of wealthier visitors who can afford the longer stays. In addition, visitor mix contributes to variation in the LOS. Japanese visitors average LOS is less than five days. Europeans and visitors from Australia and New Zealand have longer stays. The relative percentage of those visitors in the ADC causes change in LOS.

For the forecasting method, we chose three levels of LOS as shown below:

Low estimate: 6.6 An LOS of 6.6 days per person/party suggests that LOS will fall from its current level to the average over the 2000 to 2007 period. It assumes the current LOS is a deviation from the norm caused by tight markets and a lack of visitors from Major Market Areas (MMAs) with short stays. It will result in lower average daily census figures for the same visitor population, and will reduce the need for additional visitor units. Using the projected visitor arrivals forecast and a ratio of visitors per room[17] of 2.25, a 6.6 day average length of stay would produce a 14.4 percent increase in visitor units by 2035. That amounts to an average annual growth rate of about half a percent.

Medium Estimate: 7.1 At 7.1 days the LOS would be maintained at the level recorded for 2008. It assumes a slight fallback from 2011 as markets improve and the percent of visitors from Asia increase. It will result in a slightly higher average daily census and greater need for new visitor units. A 7.1 day average length of stay will yield a 23 percent increase in visitor units by 2035 and an average annual growth rate of about .08 percent.

High Estimate: 7.5: This is the same as the LOS for 2011. It will result in even higher average daily census and greater need for new visitor units. A 7.5 day average length of stay will yield a 30 percent increase in visitor units by 2035 and an average annual growth rate of about 1.05 percent.

The ratio of visitors to available rooms (VPR) is a crude measure of the pressure created on the VPI as numbers of visitors varies. Between 2001 and 2007, the VPR rose from 2.3 to 2.6, its highest level in the last two decades. That suggests that during tourism boom times, VPR may rise to about 2.6. In 2008, as the international recession hit and the visitor industry saw significant decreases in demand, Kaua'i's VPR dropped to 2.1 and hit 1.97 in 2009. The recent recovery has brought the ratio to about 2.2 in 2012. During periods of expanding demand for tourism on Kaua'i, we often hear assessments that suggest our visitor inventory is saturated and more units are needed. In periods of lesser demand, the conversation is more often about declining occupancy rates, suggesting we need more visitors for the current inventory.

[17] Visitors per room (VPR), is total visitor arrivals divided by the total visitor accommodations units in a given period of time. It differs from persons per room (PPR) which is the average number of persons actually occupying visitor accommodations units in a given period of time. VPR incorporates the occupancy rate of the day and thus it is not necessary to include the occupancy rate in this model calculation. The term is discussed further below.

Based on that logic, we propose three forecasting levels as shown below:

Low estimate: 2.10 Given a fixed forecast for visitor arrivals and an average length of stay of 7.1 days, a VPR of 2.1 would produce a situation in which Kaua'i's visitor plant would be able to meet any sharp increase in demand. Occupancy rates over the long haul would be relatively low and room rates may fall. A VPR of 2.2 would be just above the rates Kaua'i has been experiencing during the industry trough. It would require the largest number of new units over the forecast period. Kaua'i's visitor plant would increase by 32 percent by 2035, an average annual rate of 1.3 percent per annum.

Medium Estimate: 2.25 With the same forecast for visitor arrivals and LOS, a VPR of 2.25 would describe market with a VPR rate at about the average for the last two decades. Occupancy rates would vary over time, but would probably remain at an average of 70 percent or more. Room rates may rise to some extent. The number of visitor units would increase by about 23 percent, about one percent per year.

High Estimate: 2.40: For the same forecast parameters, a VPR of 2.4 would produce tighter visitor accommodations market. Because the forecast is a trend line, we expect that the VPR would rise toward the historic high several times during the forecast period. Occupancy rates would be high and room rates would rise. A VPR of 2.4 would mean that throughout the next 25 years, the visitor industry would be operating at near peak. A VPR at this level would require fewer new units. Our estimate would be that the inventory would grow by about 15 percent over the next 25 years for an average annual rate of increase at 0.6 percent.

As with the other forecasts for Kaua'i, the visitor unit projection is a trend line and the actual numbers of units will vary around that line. Variation around the trend in historical data has not been large – with the exception of the dramatic drop caused by Hurricane Iniki. We would expect development of new visitor units to follow the same pattern. Regardless of major fluctuations in visitor arrivals, visitor plant growth will be slower and less volatile in Hawaii's relatively controlled development environment.

Forecast

Figure 11 and Table 11 show the baseline visitor accommodations unit forecast for the County of Kaua'i through the year 2035. The line in Figure 11 tracks the population numbers and the bars indicate the annual growth rate.

Figure 11: Visitor Units in Kaua'i County, 1990 to 2035

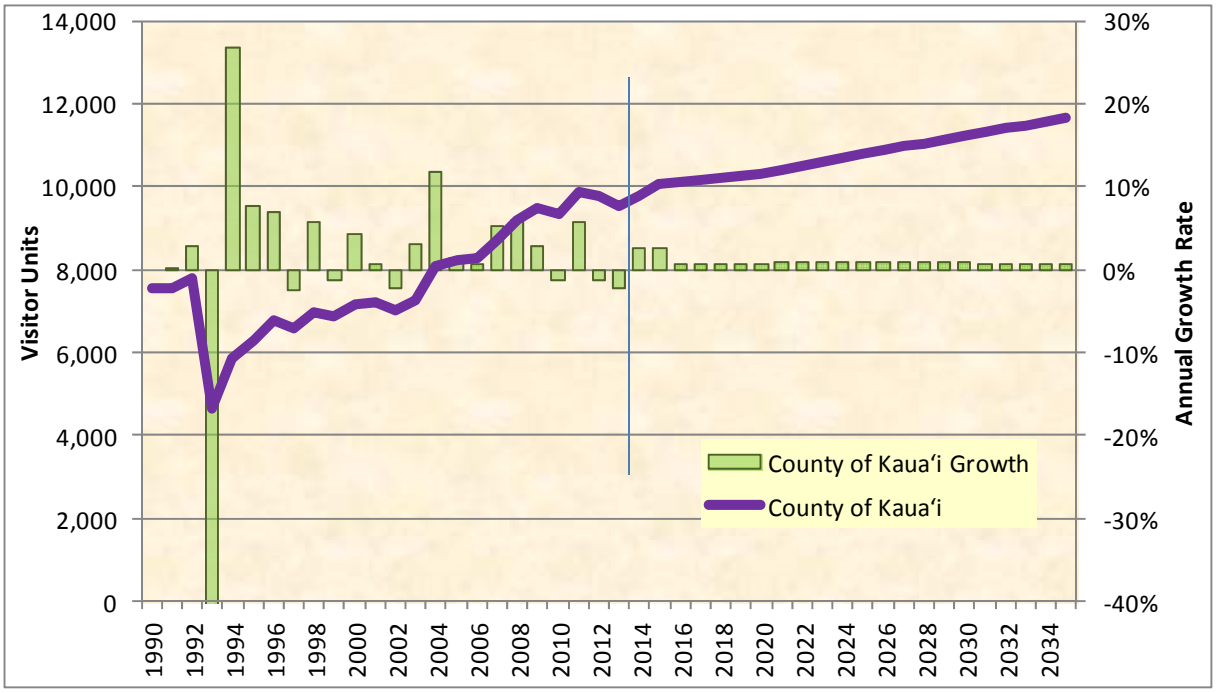


Table 11: Visitor Units in Kaua'i County, 1990 to 2035

	Year					
	1990	2000	2010	2020	2030	2035
County of Kaua'i	7,546	7,159	9,345	10,499	11,182	11,498
Average annual growth rate		-0.51%	3.05%	1.23%	0.65%	0.57%

Forecast for the Kaua'i County Planning Areas

Forecast Method

Forecasts for the six planning districts was based on the current number of visitor accommodations units in each of the districts and the estimated distribution of new units based on the requirement that new units be confined to major visitor destination areas (VDA). The number of units in each district was taken from the VPI. The entire forecast shown in this report area based on an LOS of 7.1 and a ratio of visitor to rooms at 2.25.

Forecast

Figure 12: Visitor Units in Kauaʻi County Planning Areas, 1998 to 2035

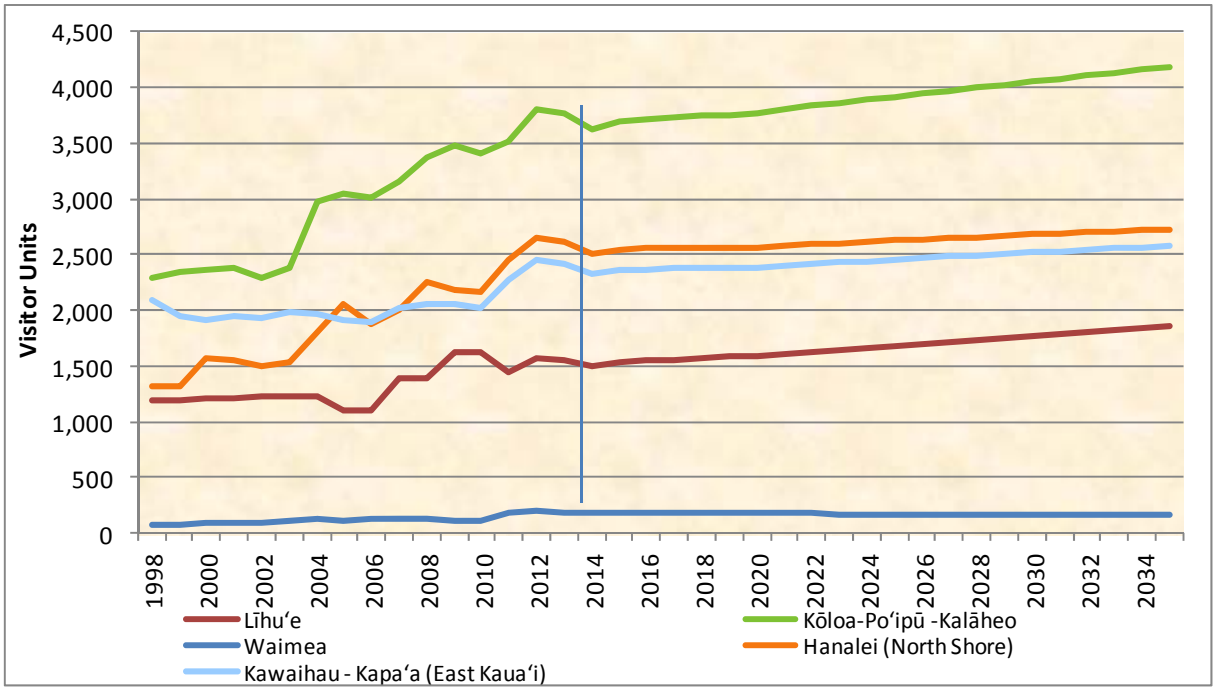


Table 12: Visitor Units in Kauaʻi County Planning Areas, 1998 to 2035

	Year					
	1998	2000	2010	2020	2030	2035
County of Kauaʻi	6,969	7,159	9,345	10,325	11,230	11,661
Līhuʻe	1,199	1,211	1,621	1,595	1,770	1,856
Kōloa-Poʻipū -Kalāheo	2,283	2,366	3,412	3,771	4,050	4,181
Hanapēpē - ʻEleʻele	0	0	0	0	0	0
Waimea	78	97	116	177	169	163
Hanalei (North Shore)	1,317	1,571	2,167	2,568	2,678	2,725
Kawaihau - Kapaʻa (East Kauaʻi)	2,092	1,914	2,029	2,388	2,516	2,574

Discussion

All of the district visitor accommodations forecasts show a rise in units between 2000 and 2010, followed by a dip between 2012 and 2014. The data reflect a current attempt to model the VPI numbers for 2012. The 2012 VPI posted a net drop in visitor accommodation units from 9,872 in 2012 to 8,289 in 2012. The drop was caused by an apparent loss of condominium, condo-hotel, and timeshare units as those unit types were converted to IVUs. Data sources external to VPI suggest there was actually a net growth in units as IVU's continued to increase. The solution was to adjust the VPI numbers upward to a new estimate of 10,674 in 2012 and forecast from that point.

APPENDIX

Resident Population

County of Kauai and District Planning Areas, 1990 through 2035

	Year					
	1990	2000	2010	2020	2030	2035
County of Kauaʻi	51,676	58,463	67,091	74,693	83,328	88,013
Līhuʻe	11,169	12,507	14,683	18,017	21,595	23,456
Kōloa-Poʻipū -Kalāheo	9,600	10,545	11,696	13,623	15,737	16,855
Hanapēpē - ʻEleʻele	3,873	4,362	6,157	6,463	6,860	7,094
Waimea	4,698	5,660	5,561	5,901	6,323	6,566
Hanalei (North Shore)	5,913	6,605	8,002	8,286	8,686	8,933
Kawaihau - Kapaʻa (East Kauaʻi)	16,192	18,784	20,992	22,403	24,128	25,110

Resident Population Growth Rates

	County of Kauai			Līhue Planning District		
	number	Rates of Change		number	Rates of Change	
Year	residents	Avg. Annual	Period	residents	Avg. Annual	Period
1990	51,676	-	-	11,169	-	-
2000	58,463	1.24	13.13	12,507	1.14	11.98
2010	67,091	1.39	14.76	14,683	1.62	17.40
2020	74,693	1.08	11.33	18,017	2.07	22.71
2030	83,328	1.10	11.56	21,595	1.83	19.86
2035	88,013	1.10	5.62	23,456	1.67	8.62
2010-2035		1.09	31.19		1.89	59.75

Households

County of Kauai and District Planning Areas, 1990 through 2035

	Year					
	1990	2000	2010	2020	2030	2035
County of Kauaʻi	16,253	20,370	23,240	25,902	28,788	30,349
Līhuʻe	3,542	4,187	4,983	6,051	7,281	7,923
Kōloa-Poʻipū -Kalāheo	3,208	3,862	4,250	4,946	5,699	6,096
Hanapēpē - ʻEleʻele	1,035	1,491	1,987	2,084	2,207	2,279
Waimea	1,460	1,893	1,962	2,165	2,253	2,306
Hanalei (North Shore)	2,070	2,552	2,881	2,998	3,123	3,201
Kawaihau - Kapaʻa (East Kauaʻi)	4,937	6,385	7,177	7,658	8,224	8,545

Household Growth Rates

Year	County of Kauai			Līhue Planning District		
	number households	Rates of Change		number households	Rates of Change	
		Avg. Annual	Period		Avg. Annual	Period
1990	16,253	-	-	3,542	-	-
2000	20,370	2.28	25.33	4,187	1.69	18.21
2010	23,240	1.33	14.09	4,983	1.76	19.01
2020	25,902	1.09	11.45	6,051	1.96	21.43
2030	28,788	1.06	11.14	7,281	1.87	20.33
2035	30,349	1.06	5.42	7,923	1.70	8.82
2010-2035		1.07	30.59		1.87	59.00

Persons per Household

County of Kauai and District Planning Areas, 1990 through 2035

	Year					
	1990	2000	2010	2020	2030	2035
County of Kauaʻi	3.15	2.87	2.89	2.88	2.89	2.90
Līhuʻe	3.15	2.99	2.95	3.00	2.97	2.96
Kōloa-Poʻipū -Kalāheo	2.99	2.73	2.75	2.77	2.77	2.76
Hanapēpē - ʻEleʻele	3.74	2.93	3.10	3.12	3.12	3.11
Waimea	3.22	2.99	2.83	2.75	2.81	2.85
Hanalei (North Shore)	2.86	2.59	2.78	2.78	2.79	2.79
Kawaihau - Kapaʻa (East Kauaʻi)	3.28	2.94	2.92	2.95	2.94	2.94

Persons per Household Growth Rates

Year	County of Kauai			Līhue Planning District		
	Pop. HH	Rates of Change		Pop. HH	Rates of Change	
		Avg. Annual	Period		Avg. Annual	Period
1990	3.15	-	-	3.15	-	-
2000	2.87	-0.92	-8.85	2.99	-0.54	-5.27
2010	2.89	0.07	0.70	2.95	-0.14	-1.36
2020	2.88	-0.02	-0.22	3.00	0.18	1.79
2030	2.89	0.04	0.38	2.97	-0.09	-0.86
2035	2.90	0.04	0.19	2.96	-0.09	-0.44
2010-2035		0.01	0.35		0.02	0.47

Total Housing Units

County of Kauai and District Planning Areas, 1990 through 2035

	Year					
	1990	2000	2010	2020	2030	2035
County of Kauaʻi	17,613	25,331	29,793	33,553	37,519	39,676
Līhuʻe	3,562	4,501	5,296	6,916	8,846	9,900
Kōloa-Poʻipū -Kalāheo	3,442	5,780	5,764	6,748	7,766	8,292
Hanapēpē - ʻEleʻele	1,669	1,942	2,240	2,563	2,921	3,120
Waimea	1,734	1,997	2,262	2,506	2,599	2,652
Hanalei (North Shore)	3,470	3,896	5,066	5,167	5,235	5,284
Kawaihau - Kapaʻa (East Kauaʻi)	3,736	7,215	9,165	9,653	10,153	10,428

Total Housing Units Growth Rates

	County of Kauai			Līhue Planning District		
	Total	Rates of Change		Total	Rates of Change	
Year	Hsg. Units	Avg. Annual	Period	Hsg. Units	Avg. Annual	Period
1990	17,613	-	-	3,562	-	-
2000	25,331	3.70	43.82	4,501	2.37	26.36
2010	29,793	1.64	17.61	5,296	1.64	17.66
2020	33,553	1.20	12.62	6,916	2.70	30.58
2030	37,519	1.12	11.82	8,846	2.49	27.91
2035	39,676	1.12	5.75	9,900	2.28	11.91
2010-2035		1.15	33.17		2.53	86.93

Total Wage and Salary Jobs

County of Kauai and District Planning Areas, 1990 through 2035

	Year					
	1990	2000	2010	2020	2030	2035
County of Kauaʻi	25,250	26,550	28,150	31,900	34,000	34,900
Līhuʻe			12,554	14,519	15,820	16,403
Kōloa-Poʻipū -Kalāheo			5,027	5,617	5,892	6,003
Hanapēpē - ʻEleʻele			695	779	821	838
Waimea			1,791	1,986	2,064	2,094
Hanalei (North Shore)			3,513	3,801	3,839	3,839
Kawaihau - Kapaʻa (East Kauaʻi)			4,570	5,199	5,565	5,724

Total Wage and Salary Jobs Growth Rates

Year	County of Kauai			Līhue Planning District		
	Total Wage & Salary Jobs	Rates of Change		Total Wage & Salary Jobs	Rates of Change	
		Avg. Annual	Period		Avg. Annual	Period
1990	25,250	-	-	-	-	-
2000	26,550	0.50	5.15	-	-	-
2010	28,150	0.59	6.03	12,554	-	-
2020	31,900	1.26	13.32	14,519	1.46	15.65
2030	34,000	0.64	6.58	15,820	0.86	8.96
2035	34,900	0.52	2.65	16,403	0.73	3.69
2010-2035		0.86	23.98		1.08	30.66

Employment (Civilian Wage and Salary Employed)

County of Kauai and District Planning Areas, 1990 through 2035

	Year					
	1990	2000	2010	2020	2030	2035
County of Kauaʻi	23,950	29,000	30,050	33,926	37,970	39,667
Līhuʻe			7,151	7,983	9,306	9,917
Kōloa-Poʻipū -Kalāheo			5,029	5,914	6,510	6,743
Hanapēpē - ʻEleʻele			2,456	3,175	3,336	3,372
Waimea			2,625	2,482	2,698	2,777
Hanalei (North Shore)			3,277	3,663	4,024	4,165
Kawaihau - Kapaʻa (East Kauaʻi)			9,512	10,708	12,095	12,693

Employment (Civilian Wage and Salary Employed) Growth Rates

Year	County of Kauai			Līhue Planning District		
	Total Jobs	Rates of Change		Total Jobs	Rates of Change	
		Avg. Annual	Period		Avg. Annual	Period
1990	23,950	-	-	-	-	-
2000	29,000	1.93	21.09	-	-	-
2010	30,050	0.36	3.62	7,151	-	-
2020	33,926	1.22	12.90	7,983	1.11	11.63
2030	37,970	1.13	11.92	9,306	1.55	16.58
2035	39,667	0.88	4.47	9,917	1.28	6.56
2010-2035		1.12	32.00		1.32	38.67

Visitor Arrivals (by air, x1000)

County of Kauai and District Planning Areas, 1990 through 2035

	Year					
	1998	2000	2010	2020	2030	2035
County of Kauaʻi	1,078	1,075	1,033	1,186	1,278	1,327
Līhuʻe	186	182	180	181	193	199
Kōloa-Poʻipū -Kalāheo	353	355	377	444	475	491
Hanapēpē - ʻEleʻele	-	-	-	-	-	-
Waimea	12	15	13	19	16	14
Hanalei (North Shore)	204	236	239	302	314	320
Kawaihau - Kapaʻa (East Kauaʻi)	324	287	224	282	298	306

Visitor Arrivals (by air, x1000) Growth Rates

	County of Kauai			Līhue Planning District		
	Visitor	Rates of Change		Visitor	Rates of Change	
Year	Arrivals	Avg. Annual	Period	Arrivals	Avg. Annual	Period
1990	1,229	-	-	186	-	-
2000	1,075	-1.33	-12.53	182	-0.22	-2.15
2010	1,033	-0.40	-3.89	180	-0.14	-1.35
2020	1,150	1.08	11.32	181	0.08	0.81
2030	1,270	1.00	10.43	193	0.64	6.63
2035	1,330	0.93	4.72	199	0.61	3.11
2010-2035		1.02	28.75		0.41	10.84

Visitor Units

County of Kauai and District Planning Areas, 1990 through 2035

	Year					
	1998	2000	2010	2020	2030	2035
County of Kauaʻi	6,969	7,159	9,345	10,325	11,230	11,661
average length of stay (days)		6.14	7.47	7.37	7.19	7.10
average daily census		18,041	19,548	23,941	25,175	25,809
visitors per room		2.52	2.09	2.21	2.23	2.25
Līhuʻe	1,199	1,211	1,621	1,595	1,770	1,856
Kōloa-Poʻipū -Kalāheo	2,283	2,366	3,412	3,771	4,050	4,181
Hanapēpē-ʻEleʻele	-	-	-	-	-	-
Waimea	78	97	116	177	169	163
Hanalei (North Shore)	1,317	1,571	2,167	2,568	2,678	2,725
Kawaihau-Kapaʻa (East Kauai)	2,092	1,914	2,029	2,388	2,516	2,574

Visitor Units Growth Rates

Year	County of Kauai			Līhue Planning District		
	Visitor Units	Rates of Change		Visitor Units	Rates of Change	
		Avg. Annual	Period		Avg. Annual	Period
1998	6,969	-	-	1,199	-	-
2000	7,159	0.27	2.73	1,211	0.10	1.00
2010	9,345	2.70	30.53	1,621	2.96	33.86
2020	10,325	1.00	10.49	1,595	-0.16	-1.62
2030	11,230	0.84	8.77	1,770	1.05	10.96
2035	11,661	0.75	3.83	1,856	0.96	4.89
2010-2035		0.89	24.78		0.54	14.51

Population in Households

	Year					
	1990	2000	2010	2020	2030	2035
County of Kauaʻi	51,177	57,831	65,930	70,032	80,206	85,813
Līhuʻe	11,189	12,353	14,072	16,202	18,791	17,604
Kōloa-Poʻipū -Kalāheo	9,623	10,542	11,607	11,979	13,678	13,701
Hanapēpē - ʻEleʻele	3,871	4,351	6,102	6,301	6,930	6,566
Waimea	4,671	5,439	5,492	5,004	5,511	5,878
Hanalei (North Shore)	5,848	6,509	7,852	8,191	9,070	8,603
Kawaihau - Kapaʻa (East Kauaʻi)	15,975	18,637	20,805	22,356	26,226	26,397

Population in Household Growth Rates

Year	County of Kauai			Līhue Planning District		
	Pop. In Households	Growth Rates		Pop. In Households	Growth Rates	
		Avg. Annual	Period		Avg. Annual	Period
1990	51,177	-	-	11,189	-	-
2000	57,831	1.23	13.00	12,353	0.99	10.40
2010	65,930	1.32	14.00	14,072	1.31	13.92
2020	70,032	0.61	6.22	16,202	1.42	15.14
2030	80,206	1.37	14.53	18,791	1.49	15.98
2035	85,813	0.68	6.99	17,604	-0.65	-6.32

De Facto Population

	Year					
	1990	2000	2010	2020	2030	2035
County of Kauaʻi	68,558	75,200	82,101	92,485	102,500	107,915
Līhuʻe		15,368	17,266	20,582	24,424	26,433
Kōloa-Poʻipū -Kalāheo		16,012	17,248	20,133	22,800	24,213
Hanapēpē - ʻEleʻele		4,362	6,157	6,463	6,860	7,094
Waimea		5,930	5,719	6,144	6,542	6,770
Hanalei (North Shore)		10,232	11,514	12,723	13,357	13,722
Kawaihau - Kapaʻa (East Kauaʻi)		23,297	24,196	26,439	28,517	29,684

De Facto Population Growth Rates

Year	County of Kauai			Līhue Planning District		
	De Facto Pop.	Rates of Change		DeFacto Pop.	Rates of Change	
		Avg. Annual	Period		Avg. Annual	Period
1990	68,558	-	-	-	-	-
2000	75,200	0.93	9.69	15,368	-	-
2010	82,101	0.88	9.18	17,266	1.17	12.35
2020	92,485	1.20	12.65	20,582	1.77	19.20
2030	102,500	1.03	10.83	24,424	1.73	18.67
2035	107,915	0.52	5.28	26,433	0.79	8.23

Average Visitors Census

	Year					
	1990	2000	2010	2020	2030	2035
County of Kauaʻi	17,378	18,041	19,548	24,069	25,738	26,589
Līhuʻe	2,940	3,052	3,391	3,655	4,069	4,286
Kōloa-Poʻipū -Kalāheo	5,743	5,962	7,137	8,643	9,311	9,654
Hanapēpē - ʻEleʻele	-	-	-	-	-	-
Waimea	235	244	243	415	415	415
Hanalei (North Shore)	3,813	3,959	4,533	5,884	6,158	6,292
Kawaihau - Kapaʻa (East Kauaʻi)	4,646	4,823	4,244	5,473	5,786	5,943

Average Visitors Census Growth Rates

Year	County of Kauai			Līhue Planning District		
	Avg. Visitors	Rates of Change		Avg. Visitors	Rates of Change	
		Avg. Annual	Period		Avg. Annual	Period
1990	17,378	-	-	2,940	-	-
2000	18,041	0.38	3.82	3,052	0.38	3.82
2010	19,548	0.81	8.35	3,391	1.06	11.11
2020	24,069	2.10	23.13	3,655	0.75	7.79
2030	25,738	0.67	6.93	4,069	1.08	11.33
2035	26,589	0.33	3.31	4,286	0.52	5.33

Employees per Job

	Year					
	1990	2000	2010	2020	2030	2035
County of Kauaʻi	0.95	1.09	1.07	1.06	1.12	1.14
Līhuʻe		0.99	0.57	0.55	0.59	0.60
Kōloa-Poʻipū -Kalāheo		0.98	1.00	1.05	1.10	1.12
Hanapēpē - ʻEleʻele		0.99	3.53	4.07	4.07	4.03
Waimea		0.98	1.47	1.25	1.31	1.33
Hanalei (North Shore)		0.99	0.93	0.96	1.05	1.08
Kawaihau - Kapaʻa (East Kauaʻi)		1.00	2.08	2.06	2.17	2.22

Employees per Job Growth Rates

	County of Kauai			Līhue Planning District		
	Employed	Rates of Change		Employed	Rates of Change	
Year	per Job	Avg. Annual	Period	per Job	Avg. Annual	Period
1990	0.95	-	-	-	-	-
2000	1.09	1.42	15.16	0.99	-	-
2010	1.07	-0.23	-2.27	0.57	-5.37	-42.41
2020	1.06	-0.04	-0.37	0.55	-0.35	-3.48
2030	1.12	0.49	5.01	0.59	0.68	6.99
2035	1.14	0.18	1.78	0.60	0.27	2.77